

This presentation premiered at WaterSmart Innovations

watersmartinnovations.com



Conservation Rates: A Matrix for Scoring Water Utility Pricing Practices

Edward Osann, Robert Shaver, and Luke Sires

WaterSmart Innovations 2014

Las Vegas, NV

October 9, 2014

Water Conservation is Good

- Makes Good Business Sense: Often, conservation is the cheapest “water supply”
- Lowers Long-term Capital and Operating Costs
 - Reduced infrastructure
 - Reduced power consumption (pumping, treatment, etc.)
 - Reduced chemicals
- It’s the right thing to do for the environment
 - Habitat preservation
 - Greenhouse gas emissions
 - Lowers wastewater treatment costs
- A conservation price signal is one tool to reinforce conservation and water-use efficiency

Pricing is an Established Conservation Tool

- Pricing has long been recognized as an important tool for water conservation and efficiency
- Conservation Pricing has been an urban Best Management Practice (BMP) in California since 1991
- Pricing included in Bureau of Reclamation Conservation Guidelines since mid-90s

- But...

Utility Business Model Presents Challenges for Conservation Pricing

- High fixed-cost operations
 - Operating costs typically do not vary much with demand
- Highly capitalized, infrastructure-intensive
 - Debt and debt coverage requirements
- Revenue varies with weather and the overall economy
- Utility reserves are receiving more scrutiny
- Rate-making for public systems is left to local governing boards that are locally responsive, but often not experts
- AND – still trying to get customers to use less “product”

The Rate Structure Tug-of-War

Finance Interests

- Recover Cost of Service
- Achieve Revenue and Rate Stability
- Maintain Manageable Reserves
- Meet Debt Service Obligations
- Customer Affordability



Conservation Interests

Conservation
Price Signal

Proposed Assessment Tool A Result of Multi Stakeholder Negotiations

- Negotiators aimed to modify the CUWCC's BMP on Conservation Pricing to produce a new tool for assessing/comparing pricing and price signals
 - Flexible
 - Meaningful assessment of the Conservation Price Signal as conveyed in --
 - Rate structure
 - bill bottom line
 - Utility-to-customer communications
- Proposed tool is referred to as the Matrix
- Potential applications are not limited to California

The Matrix Explained



Water Pricing Evaluation Matrix

Section 1 - Water Rate Structure (Max- 23 Pts)

		Uniform Rate	Seasonal or 2-Tiered	3 or more Tiers or Allocation	Points
Rate Structure	Single Family Residence	1 Point	4 Points	8 Points	
	Multi-Family Residence	1 Point	3 Points	5 Points	
	CII	1 Point	3 Points	5 Points	
	Dedicated Irrigation	1 Point	3 Points	5 Points	

Section 2 - Level of Pricing Signal (Max- 23 Pts)

		1.5 to 1.59	1.6 to 1.69	1.7 to 1.79	1.8 to 1.89	1.90 to 2.0	Points
Proportionality Test	Single Family Residential	4 Points	8 Points	12 Points	16 Points	20 Points (3 pt bonus > 2.0)	

Section 3 - Conservation Price Signal Enhancements (Max- 14 Pts)

		Points
Utility provides monthly billing for all customer classes		1 Point
Water bill (whether paper or electronic) displays water use in gallons or gallons per day (gpd) for at least all residential customers		1 Point
Utility communicates information on water use trends on the bill or online		2 Points
At least 50% of all irrigated landscapes greater than or equal to 1 acre in size are supplied by dedicated irrigation meters		2 Points
Utility has a program to provide reports to customers that compare their water use - to others, benchmarks or past use (indicating unusually high use) - with recommendations for conserving water (excluding AMI)		2 Points
Utility uses an AMI system to provide customers with alerts for possible high use, leaks and consumption approaching the next tier		3 Points
Utility is implementing an innovative rate structure to promote efficiency, such as consumption-based fixed charges*		2 Points
Utility's water meter connection/facilities fee structure incentivizes the installation of water efficient buildings and landscapes		1 Point
Total Points Scored		

Matrix Section 1 – Water Rate Structure

Section 1 - Water Rate Structure (Max- 23 Pts)					
		Uniform Rate	Seasonal or 2-Tiered	3 or more Tiers or Allocation	Points
Rate Structure	Single Family Residence	1 Point	4 Points	8 Points	
	Multi-Family Residence	1 Point	3 Points	5 Points	
	CII	1 Point	3 Points	5 Points	
	Dedicated Irrigation	1 Point	3 Points	5 Points	

Matrix Section 2 – Proportionality

Section 2 - Level of Pricing Signal (Max- 23 Pts)							
		1.5 to 1.59	1.6 to 1.69	1.7 to 1.79	1.8 to 1.89	1.90 to 2.0	Points
Proportionality Test	Single Family Residential	4 Pts	8 Pts	12 Pts	16 Pts	20 Pts (3 Pt bonus > 2.0)	

The Proportionality Test compares the total bill (both fixed and variable charges) for a customer with the total bill for another customer using twice as much water to determine the strength of the pricing signal embedded in the rate and charges structure. A utility has three options for calculating the level of pricing signal. The options are --

1. **The bill for 0.75 x the average water use divided into the bill for a customer using 1.5 x the average water use;**
2. **The bill for 0.75 x the peak period water use divided into the bill for a customer using 1.5 x the peak period water use; or**
3. **The bill for water consumption of 15hcf divided into the bill for water consumption of 30hcf.**

Matrix Section 2 (cont'd) – Sample

Section 2 - Level of Pricing Signal (Max- 23 Pts)							
		1.5 to 1.59	1.6 to 1.69	1.7 to 1.79	1.8 to 1.89	1.90 to 2.0	Points
Proportionality Test	Single Family Residential	4 Pts	8 Pts	12 Pts	16 Pts	20 Pts (3 pt bonus >2.0)	12 Points

- Several alternatives to use
 - Peak period
 - Average use
 - Fixed comparison (15hcf to 30hcf)
- Example Calculation

3. The bill for water consumption of 15hcf divided into the bill for water consumption of 30hcf.

- Meter Fee – \$34.35/month
- Rate structure – Inclining Block

$$\text{Level of pricing signal} = \$138.71 / \$81.56 = \mathbf{1.70}$$

Water Rate Structure	Blocks (HCF)	Rate (\$/HCF)
Tier 1	0-7	2.39
Tier 2	7-44	3.81
Tier 3	>44	4.88

Charges	15 HCF Bill	30 HCF Bill
Meter Charge	\$ 34.35	\$ 34.35
Tier 1	\$ 16.73	\$ 16.73
Tier 2	\$ 30.48	\$ 87.63
Tier 3	\$ -	\$ -
Monthly Bill	\$ 81.56	\$ 138.71

Matrix Sec 3 - Price Signal Enhancements

Draft Water Conserving Rates Matrix		
Section 3 - Conservation Price Signal Enhancements (Max- 14 Pts)		Points
Utility provides monthly billing for all customer classes	1 Point	-
Water bill (whether paper or electronic) displays water use in gallons or gallons per day (gpd) for at least all residential customers	1 Point	-
Utility communicates information on water use trends on the bill or online	2 Points	-
At least 50% of all irrigated landscapes greater than or equal to 1 acre in size are supplied by dedicated irrigation meters	2 Points	-
Utility has a program to provide reports to customers that compare their water use - to others, benchmarks or past use (indicating unusually high use) - with recommendations for conserving water (excluding AMI)	2 Points	-
Utility uses an AMI system to provide customers with alerts for possible high use, leaks and consumption approaching the next tier	3 Points	-
Utility is implementing an innovative rate structure to promote efficiency, such as consumption-based fixed charges*	2 Points	-
Utility's water meter connection/facilities fee structure incentivizes the installation of water efficient buildings and landscapes	1 Point	-
Total Points Scored		

* Tiered, seasonal or allocation-based rates are already acknowledged in Section 1 of the matrix and do not qualify for additional points here.

What Pricing Issues are NOT Covered, and Why

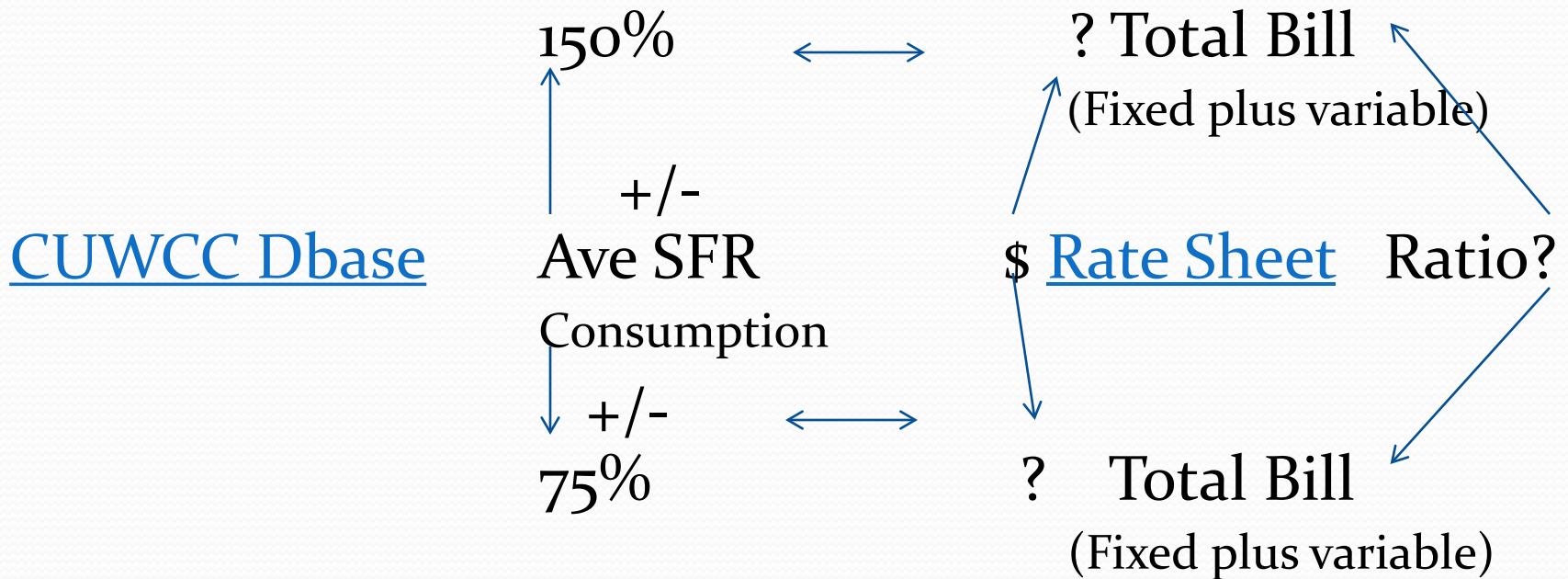
The Matrix does not take into account any of the following –

- Presence or absence of water meters
- Sanitary sewer rates and charges
- Property tax revenues received by water suppliers
- Proportionality of rates for other customer classes beside single-family residential
- Special provisions for very small systems
- Drought contingency rates

Matrix Test Scoring

- Estimated matrix scores to better understand how the matrix would apply to members.
- Tested for about 60 agencies across California – about 1/3 of regularly reporting retail suppliers
- Spreadsheet calculates points for rate structure, proportionality, and monthly billing points
 - Estimated 47 points out of 60 possible points. Only 1 point (monthly billing) was included from the 14 possible enhancements.
- Estimated with and without a regional peaking factor
- Water use data is from 2010-12; Rate data is from 2012-14

Matrix Test Scoring



Preliminary Results: California

Estimated Scoring for 60 California Retail Water Suppliers

Region	Count	Average Points			Total Points*		
		Rate Structure	Price Signal	Enhancements	Max	Min	Avg
Central Coast	2	16	23	1.0	45	35	40
North Coast	3	14	18	0.0	34	27	32
Sacramento River	9	12	8	0.6	44	7	21
San Francisco Bay	10	12	17	0.6	47	16	30
San Joaquin River	2	23	12	0.0	46	23	35
South Coast	32	14	17	0.7	47	13	31
Tulare Lake	2	8	6	1.0	24	5	15
Total Average		13	15	0.6			29

*Estimate of 47 of 60 Possible Points

Preliminary Results: California

Estimated Pricing Signal for 60 California Retail Water Supplier

Region	Count	Pricing Signal (Ratio)		
		Max	Min	Avg
Central Coast	2	2.19	2.04	2.12
North Coast	3	2.14	1.61	1.92
Sacramento River	9	1.98	1.39	1.64
San Francisco Bay	10	2.25	1.61	1.90
San Joaquin River	2	2.28	1.24	1.76
South Coast	32	2.74	1.50	1.93
Tulare Lake	2	1.79	1.41	1.60
Total Average				1.87

Preliminary Results:

Colorado Basin Utilities

Estimated Pricing Signal and Scoring of 9 Colorado River Basin Agencies*

State	Service Area Population	Pricing Signal	Rate Structure	Pricing Signal	Enhancements	Total
NM	100k-500k	1.74	4	12	1	17
CA	>500k	1.75	11	12	0	23
CO	100k-500k	1.89	17	16	1	34
AZ	>500k	3.44	13	23	1	37
WY	<100k	2.13	13	23	1	37
UT	100k-500k	1.88	23	16	1	40
CO	100k-500k	2.38	17	23	1	41
CO	>500k	2.69	17	23	1	41
NV	>500k	2.39	23	23	1	47

*Estimate of 47 of 60 Possible Points

- Uses 15HCF and 30 HCF to calculate proportionality
 - No peaking factor applied

Contact Information

Ed Osann
Natural Resources Defense Council
(310) 434-2300
eosann@nrdc.org

Bob Shaver
Alameda County Water District
Fremont, CA 94538
(510) 668-4401
Robert.Shaver@acwd.com

Luke Sires
California Urban Water Conservation Council
Sacramento, CA 95814
(916) 552-5885
luke@cuwcc.org